KPMG Consulting

P U B L I C S E R V I C E S

What is Data Warehousing?

Presented to:

FYDP Improvement Team

16 May 2001

Table of Contents

- ***What is a Data Warehouse?***
- Some Examples
- Conclusion
- Questions

Data Warehouse Definition

"A Data Warehouse is a compilation of data used by executives and staff to make well-informed, high-impact decisions."

Data warehouses and reporting/analytical applications are key technical components of Business Intelligence . . .

Problems with Today's Environments

- Islands of Automation
- Data is Organized for INPUT not OUTPUT
- Information is Not Easily Accessible
- Poor or Missing Documentation
- Inconsistent and Dirty Data
- Data Structures are Not Understandable
- Hard to Perform Analysis on Data
- Poor System Interface/Limited Functionality of Front End Tools
- Multiple and Possibly Conflicting Sources of information

Composition of a Data Warehouse

- Repository of current and historical data gathered from multiple sources
- Designed to optimize the retrieval of information and knowledge
- Data store for ***information analysis***
- Separate from operational systems
- Non-volatile, read only
- Optimized to process information inquiries as quickly and efficiently as possible

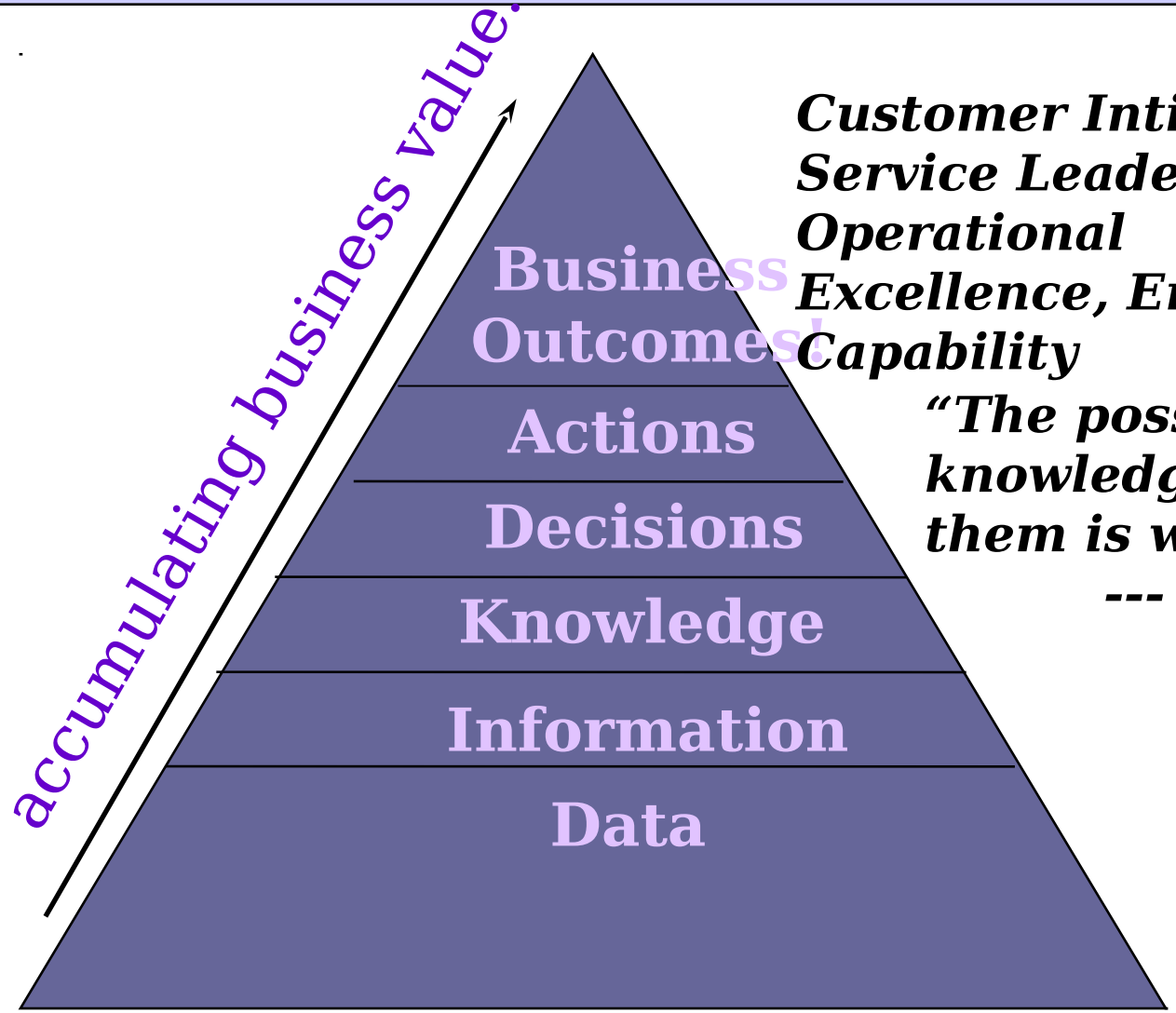
Benefits of Data Warehousing

- By providing integrated information, you can see relationships between events recorded in independent systems.
- By providing historical information, you can spot trends and make comparisons.
- By providing one service for this information, your answers will be consistent with those provided by others.
- By providing a user-friendly interface, you can query and format your information to meet your particular business needs.

What does this mean to you?

You can more effectively manage your business.

Get Focused on Value

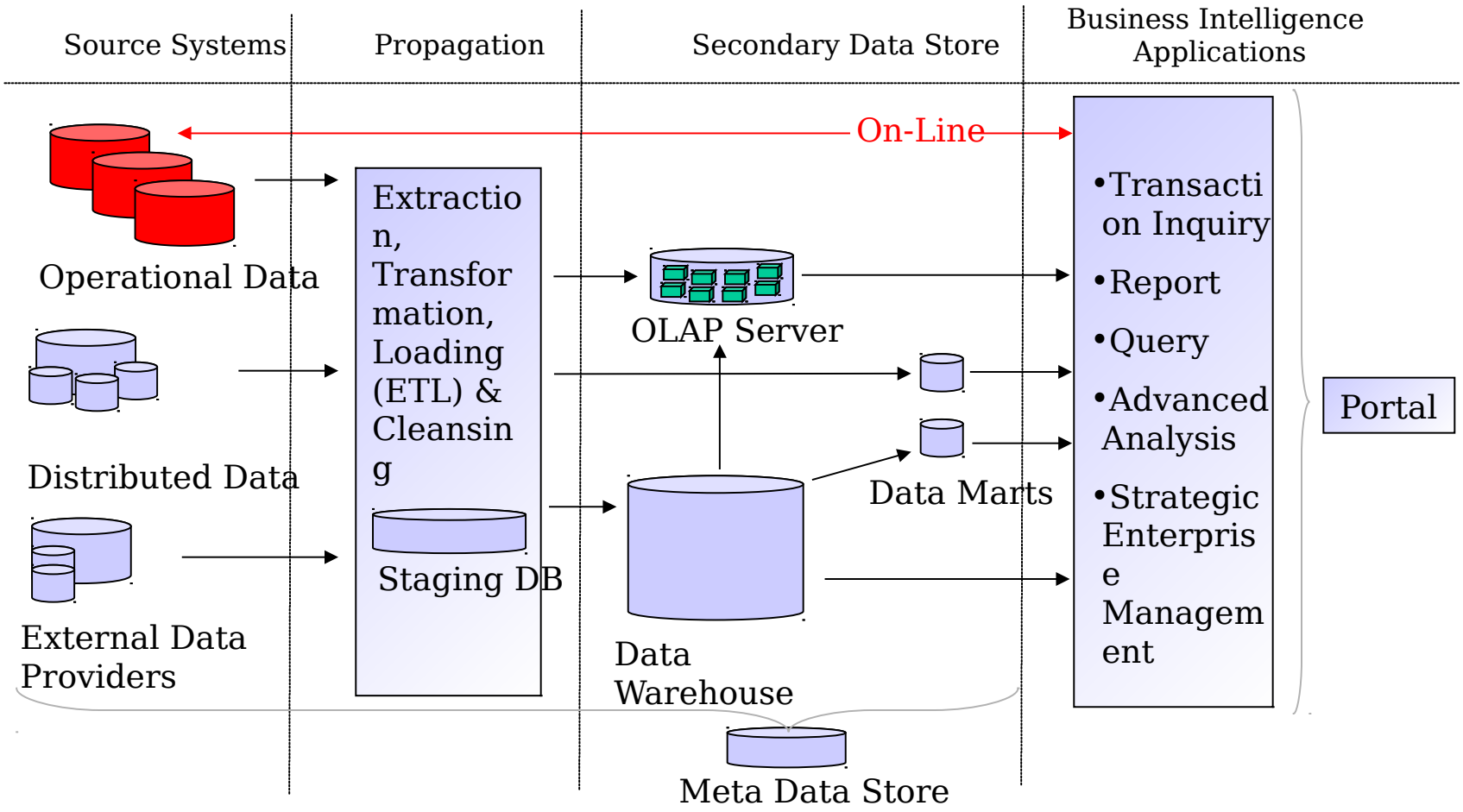


Customer Intimacy, Service Leadership, Operational Excellence, Employee Capability

"The possession of facts is knowledge, the use of them is wisdom"

--- Thomas Jefferson

Technical Components of a Data Warehouse



DW Vendors now offer DW suites often including ETL, DW, Query and OLAP tools as well as pre-configured integration to ERP products.

KPMG Consulting

What is a Data

ETL tools are used to propagate data to informational databases optimized for Business Intelligence by combining data from different sources, de-normalizing data, summarizing data etc.

ETL Tools*	Cleansing Tools
Informatica Power Mart	Vality
Prism Whse Mgr	First Logic
D2K ILN	Trillium
Ardent DataStage	
IBM Data Propagator w/OLAP tool	

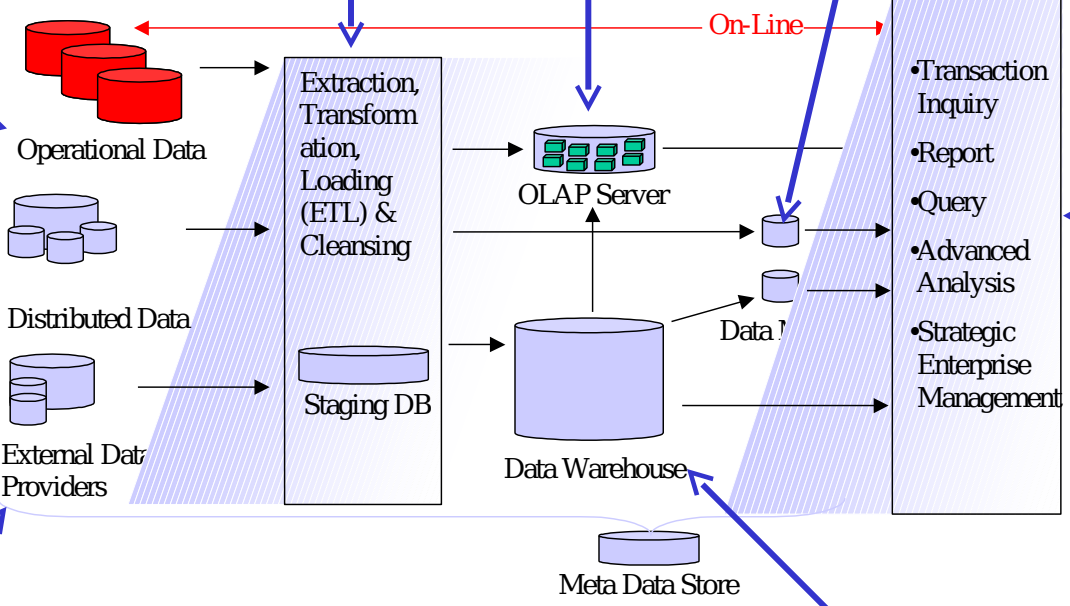
*Can be associated

OLAP (On-Line Analytical Processing) servers store data categorized into multiple dimensions (cubes). Cubes allow for easy "slicing and dicing" of data.

Data Marts are mini data warehouses tailored to the unique needs of a specific group such as a function or IC.

Online Transactional Processing (OLTP) Applications store, retrieve and update Operational Data in individual databases optimized for transactional processing. For example:

WINPAT
NBTS
SMIS
PDS



Distributed Data range from analytical spreadsheets to data from decentralized shadow systems. Database types vary.

External Data may include data from: STARS, SABRS, TFMMS, etc.

Metadata is information about data. For example, logical data structures, data source and state transition information, semantic (consumer-friendly) descriptions of data. Meta data tools include:

- Platinum Repository
- Prism Warehouse Directory

The DW is an integrated, lightly summarized, subject-oriented, non-volatile collection of data which is not updated by users. It is optimized for Business Intelligence. Data Warehouses use powerful, scalable DBs like DB2 and Oracle.

Transaction Inquiry
On-line look-up and updating of transaction statuses and history using the OLTP application(s). Examples include status of requisitions and purchase orders, receipts, inventory levels, trial-balance.

Report
A formatted and organized presentation of data. Report Writers include:

- ***Oracle Reports and FSG***
- Crystal Reports
- Showcase Reports

Query
A request for information from a database based on user defined parameters. Query tools include:

- COGNOS Impromtu
- Oracle Web Discoverer
- MS Access

Advanced Analysis
Using computer tools to produce an analysis for management decision, usually involving trend analysis, drill-down analysis, demographic analysis, profiling, forecasting etc. Analysis tools include:

- COGNOS PowerPlay - OLAP
- Microstrategy - OLAP
- Business Objects - OLAP
- Oracle Darwin – Data Miner
- SAS Enterprise – Data Miner

Strategic Enterprise Management
User-defined performance indicators and built-in workflow capabilities automatically notify decision makers when performance indicators are outside target guidelines.
Products include:

- Microstrategy

Table of Contents

- What is a Data Warehouse?
- ✔ ***Some Examples***
- Conclusion
- Questions

Report

- A pre-formatted and organized presentation of data.
- Generally available as a pre-defined output of data
- Report Writers include:
  - *Oracle Reports*
  - *Crystal Reports*
  - *Showcase Reports*
  - *Graphical Query Language*

Report Example

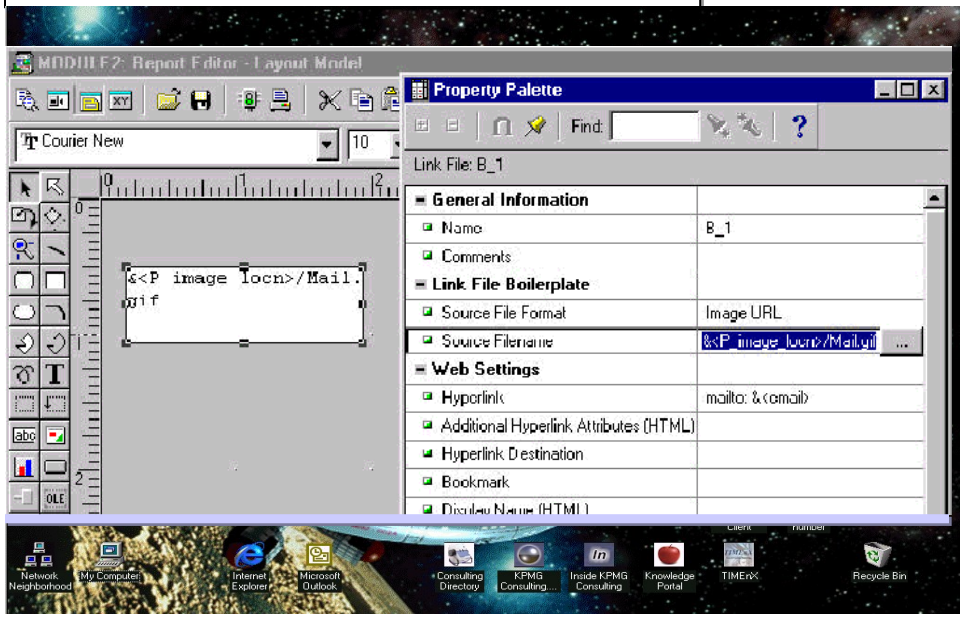
KPMG Consulting

Some Examples

Build

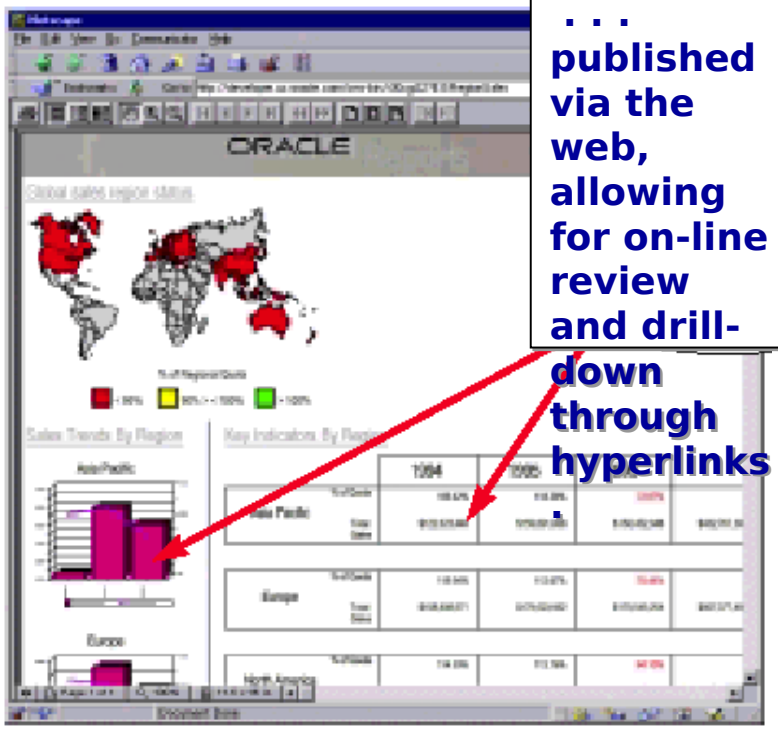
Reports are a formatted, organized and standardized presentations of data like:

- **Financial Statements**
- **Journals Daybook**
- **Budget vs. Actual Report**



Publish

Reports are often printed or . . .



. . . published via the web, allowing for on-line review and drill-down through hyperlinks

Query

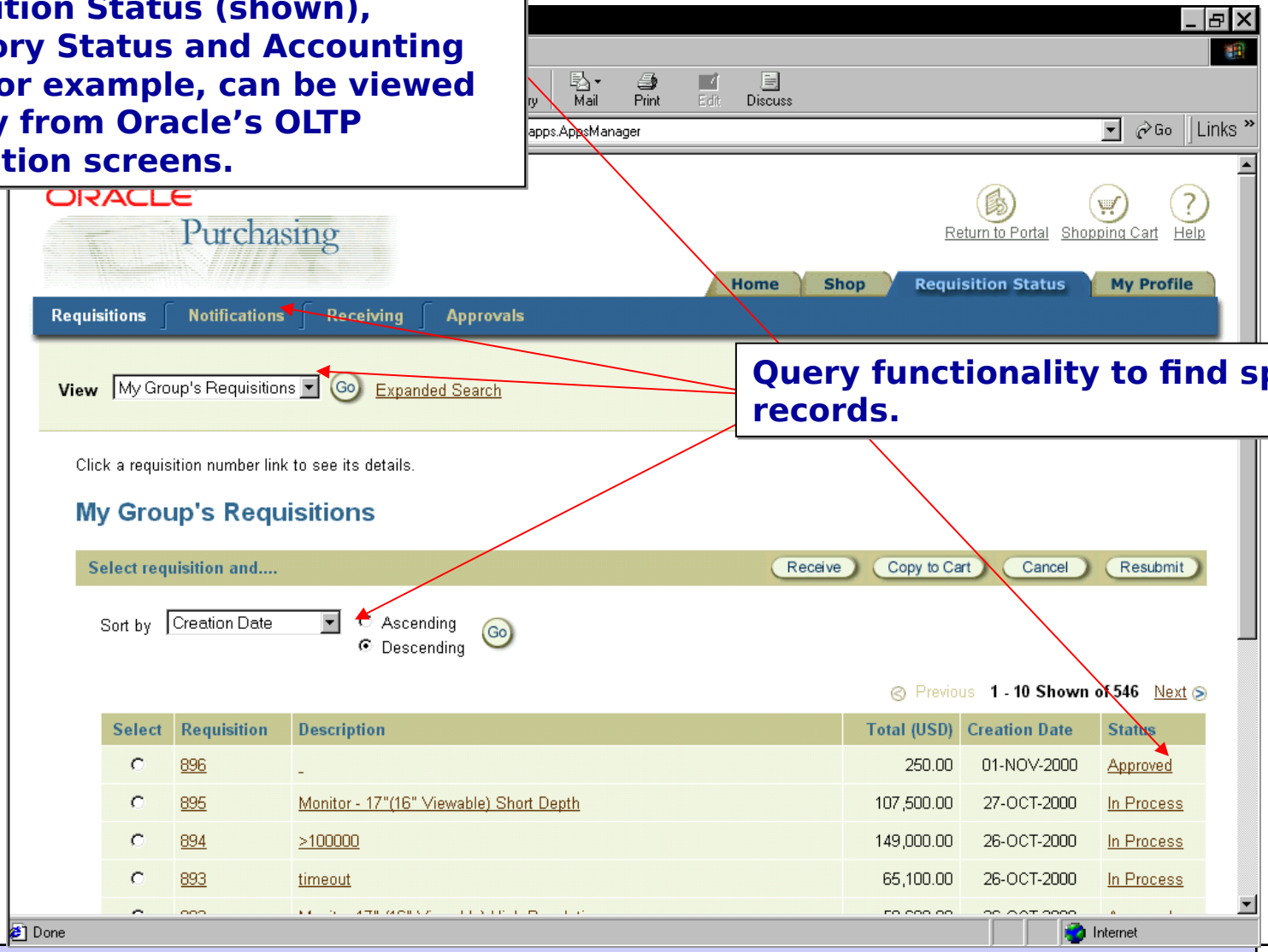
- A request for information from a database based on user defined parameters
- Generally available as either pre-defined, user-customized, or a combination of both
- Query tools include:
  - *COGNOS Impromptu*
  - *Oracle Web Discoverer*
  - *MS Access*

Query Example

KPMG Consulting

Some Examples

Requisition Status (shown), Inventory Status and Accounting Data, for example, can be viewed directly from Oracle's OLTP application screens.



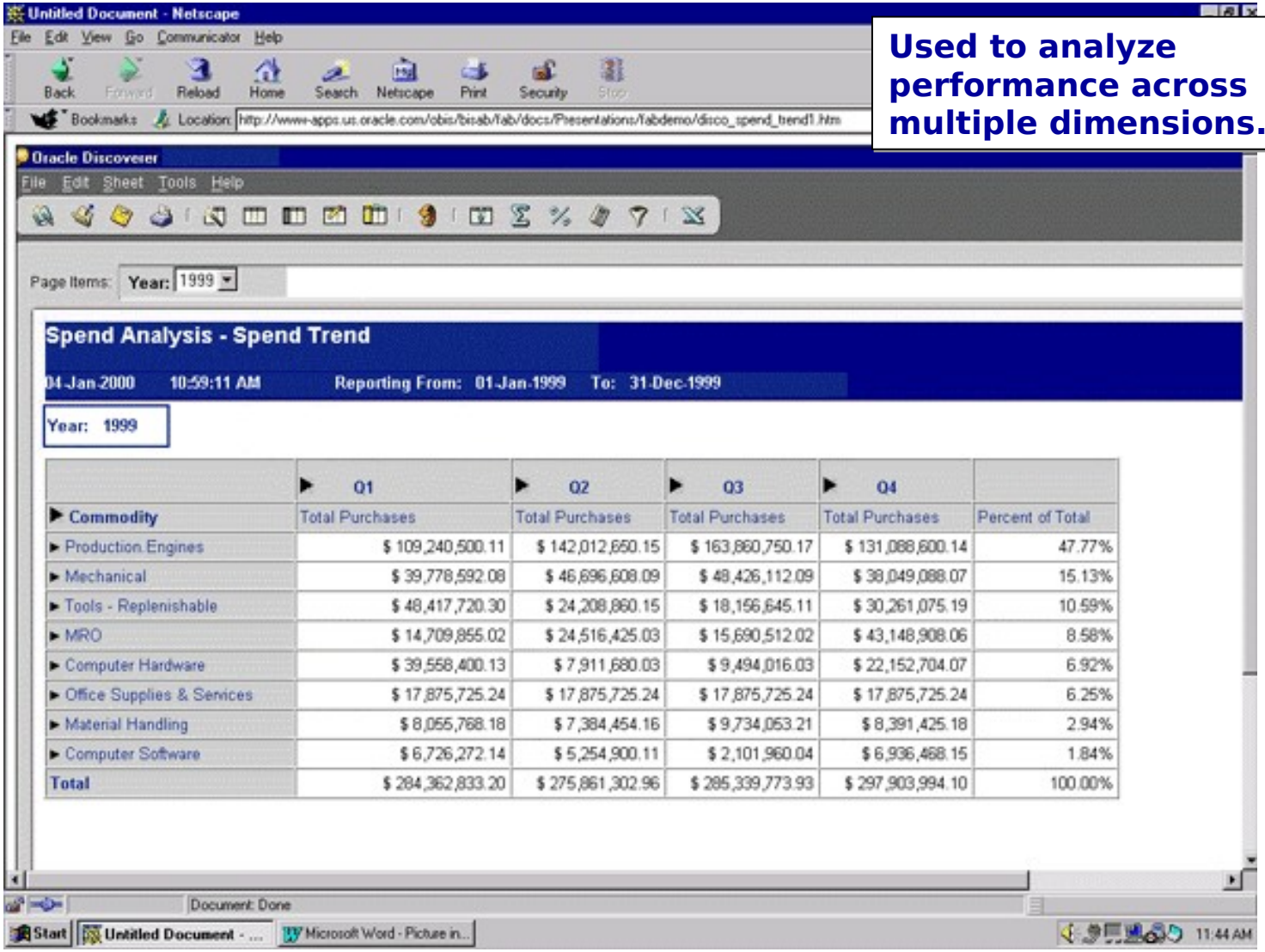
Query functionality to find specific records.

Advanced Analysis

- Using computer tools to produce an analysis for management decisions, usually involving trend analysis, drill-down analysis, demographic analysis, profiling, forecasting etc.
- Generally available as either pre-defined, user-customized, or a combination of both
- Analysis tools include:
  - *COGNOS PowerPlay - OLAP*
  - *Microstrategy - OLAP*
  - *Business Objects - OLAP*
  - *Oracle Darwin – Data Miner*
  - *SAS Enterprise – Data Miner*

Advanced Analysis Example

Used to analyze performance across multiple dimensions.


Untitled Document - Netscape
File Edit View Go Communicator Help
Back Forward Reload Home Search Netscape Print Security Stop
Bookmarks Location: http://www-apps.us.oracle.com/obis/bisab/tab/docs/Presentations/Tabdemo/disco_spend_trend1.htm
Oracle Discoverer
File Edit Sheet Tools Help
Page Items: Year: 1999
Spend Analysis - Spend Trend
04-Jan-2000 10:59:11 AM Reporting From: 01-Jan-1999 To: 31-Dec-1999
Year: 1999
Document: Done
Start Untitled Document - ... Microsoft Word - Picture in...
11:44 AM

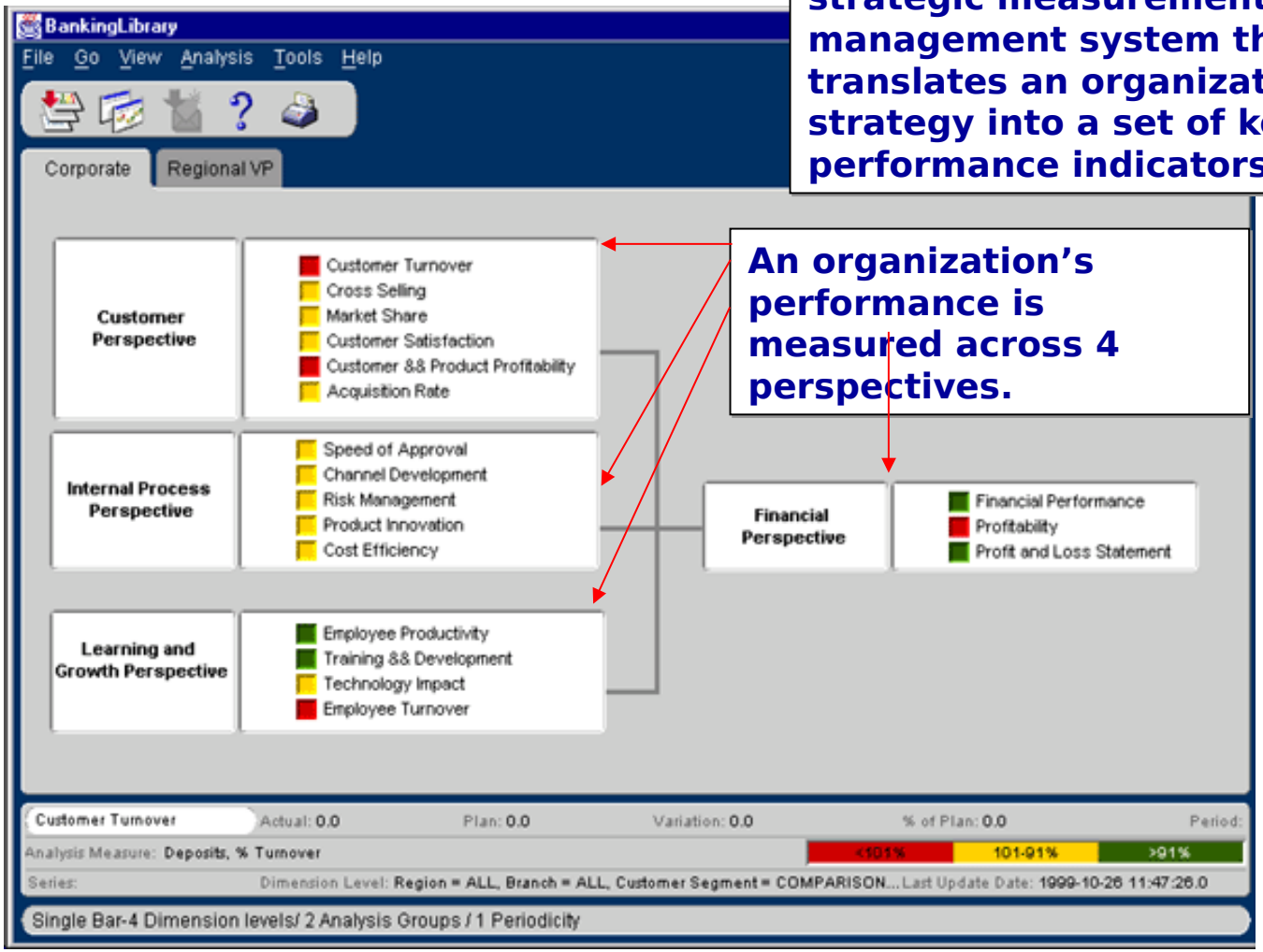
	Q1	Q2	Q3	Q4	
Commodity	Total Purchases	Total Purchases	Total Purchases	Total Purchases	Percent of Total
Production Engines	$ 109,240,500.11	$ 142,012,650.15	$ 163,860,750.17	$ 131,088,600.14	47.77%
Mechanical	$ 39,778,592.08	$ 46,696,608.09	$ 48,426,112.09	$ 38,049,088.07	15.13%
Tools - Replenishable	$ 48,417,720.30	$ 24,208,860.15	$ 18,156,645.11	$ 30,261,075.19	10.59%
MRO	$ 14,709,855.02	$ 24,516,425.03	$ 15,690,512.02	$ 43,148,908.06	8.58%
Computer Hardware	$ 39,558,400.13	$ 7,911,680.03	$ 9,494,016.03	$ 22,152,704.07	6.92%
Office Supplies & Services	$ 17,875,725.24	$ 17,875,725.24	$ 17,875,725.24	$ 17,875,725.24	6.25%
Material Handling	$ 8,055,768.18	$ 7,384,454.16	$ 9,734,053.21	$ 8,391,425.18	2.94%
Computer Software	$ 6,726,272.14	$ 5,254,900.11	$ 2,101,960.04	$ 6,936,468.15	1.84%
Total	$ 284,362,833.20	$ 275,861,302.96	$ 285,339,773.93	$ 297,903,994.10	100.00%

Strategic Enterprise Management

- User-defined performance indicators and built-in workflow capabilities automatically notify decision makers when performance indicators are outside target guidelines.
- Generally available as pre-defined indicators
- Products include:
  - *Microstrategy*
  - *Oracle Balanced Scorecard*
  - *Baan Decision Maker*

Strategic Enterprise Management Example

The Balanced Scorecard is a strategic measurement and management system that translates an organization's strategy into a set of key performance indicators (KPIs)



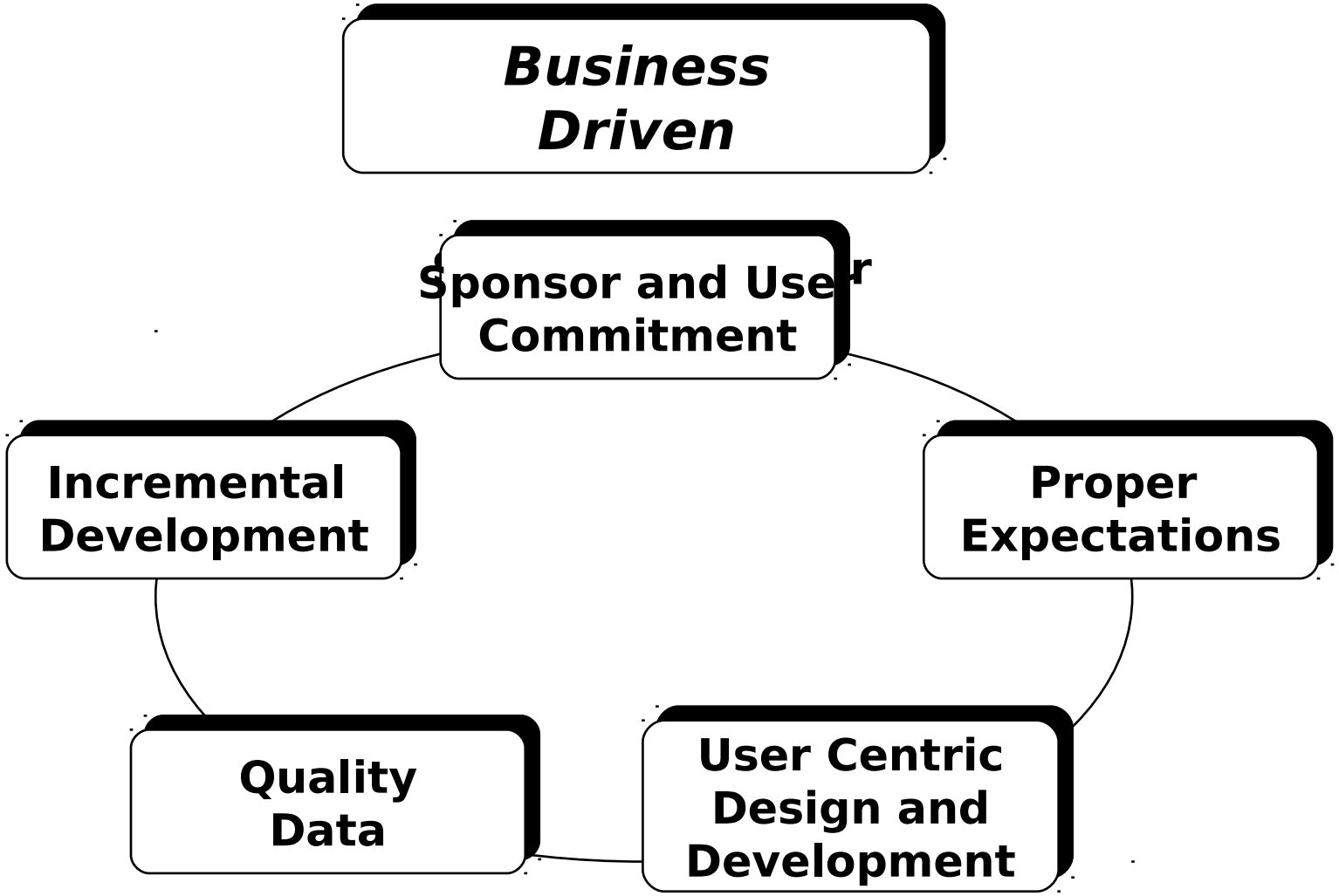
Strategic Enterprise Management Example

A Homepage can serve as the portal to various levels of Business Intelligence, OLTP applications and the internet.

Table of Contents

- What is a Data Warehouse?
- Some Examples
- ✔ ***Conclusion***
- Questions

Critical Success Factors



Key Points on Data Warehouse Design

- A data warehouse is not a system or a database – it is an environment for enabling the organization to solve business problems.
- The warehouse should be evolutionary. The solution needs to be fluid in order to provide the ability to grow with the organization as business challenges arise.
- The warehouse should not be revolutionary and should leverage proven processes and technologies to reduce the risk for an organization.

Thank you!

Questions?